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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATES OF CORRECTION BRANCH

In re Application of:

Nishikawa et al.

Patent No.: 7,273,647

Issue Date: September 25, 2007

For: SILICON ANNEALED WAFER AND SILICON EPITAXIAL WAFER

**REQUEST FOR CERTIFICATE OF CORRECTION**

Commissioner of Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

April 2, 2008

Sir:

Applicant hereby requests issuance of a Certificate of Correction pursuant to 37 CFR 1.322 as shown on the attached form PTO-1050.

The correction requested herein is the result of Patent Office printing mistakes.

A non-patent publication submitted with an IDS and acknowledged by the Examiner is missing from the front page of the patent. A copy of the Examiner's acknowledgement is attached.

There are two typographical errors in the claims and are detailed on the attached PTO-1050. A copy of the pertinent pages of the most recent amendment is attached.

Accordingly, issuance of the certificate is respectfully requested.

Since the errors were the result of a Patent Office oversight, no fee is required, however, please charge any fee deficiency or credit any overpayment to Deposit Account No. 50-1088.

Respectfully requested,  
CLARK & BRODY

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Docket No.: 12054-0025

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Patent Publication

APR 03 2008

Certificate  
APR 03 2008  
of Correction

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,273,647  
APPLICATION NO. : 10/809,712  
ISSUE DATE : September 25, 2007  
INVENTOR(S) : Nishikawa et al.

It is certified that errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Front Page, Under References Cited, Non-Patent Publication should be included:  
K. Nakai; "NITROGEN AND CARBON EFFECT ON THE FORMULATION OF GROWN-IN DEFECTS AND OXYGEN PRECIPITATION BEHAVIOR"; the 52nd Conference of the Japanese Association for Crystal Growth, Bulk Growth Section Meeting; February 8, 2000, pgs. 6-9

Column 15, line 17:  
"the annealing process is performed at 11000°C - 1250°C for"  
should read:  
"the annealing process is performed at 1100°C - 1250°C for"

Column 16, line 8:  
"oxygen precipitates formed at a density of  $1 \times 10^{14}$  counts/"  
should read:  
"oxygen precipitates formed at a density of  $1 \times 10^4$  counts/"

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## DETAILED ACTION

### *Information Disclosure Statement*

1. The information disclosure statement filed 03/26/04 has been considered and made of record. A copy of the 1449 initialed, dated and signed by the Examiner is included herewith.

### *Claim Objections*

2. Claims 1 and 8 are objected to because of the following informalities: the phrase "a oxygen" should be --an oxygen--. Appropriate correction is required.

### *Priority*

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Tamatsuka (USPN 6,413,310).

Tamatsuka teaches silicon annealed wafers wherein the wafers have a COP defect free layer having a thickness of 5 microns and the recited COP defect density (see abstract and examples, for instance). Tamatsuka additionally teaches that the bulk material has a nitrogen concentration as presently claimed (col. 4, lines 7-16, for example). The process limitations recite in the present claims, e.g., claims 4, 5, 7, 8, 11, and 13-15, are not being given patentable

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Examiner: Timothy R. Speer Date Considered: 06/06

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

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Serial No.: 10/809,712

## IN THE CLAIMS

Please amend the claims as follows:

1. (original) A silicon annealed wafer, on the surface of which a COP defect free layer having a thickness of 5  $\mu\text{m}$  or more is formed by annealing a base material wafer, wherein said base material wafer includes:

a COP defect region of a single crystal containing nitrogen at a concentration of less than  $1 \times 10^{14}$  atoms/cm<sup>3</sup>, wherein said COP defect has a size of 0.1  $\mu\text{m}$  or less in the highest frequency of occurrence and there exist no COP defects having a size of more than 0.2  $\mu\text{m}$ ;

oxygen precipitates formed at a density of  $1 \times 10^4$  counts /cm<sup>2</sup> or more when said base material wafer is subjected to a oxygen precipitate evaluation heat treatment; wherein

the ratio of the maximum to the minimum of BMD (oxygen precipitate) density is 3 or less in the radial direction of said base material wafer.

2. (original) A silicon annealed wafer according to Claim 1, wherein the oxygen concentration of said base material wafer is  $11 \times 10^{17} - 17 \times 10^{17}$  atoms/cm<sup>3</sup> (ASTM F-121, 1979).

3. (original) A silicon annealed wafer according to Claim 1, wherein said COP defect occurrence region extends over an 80% or more surface area of said base material wafer in the radial direction.

4. (previously presented) A silicon annealed wafer according to Claim 1, wherein the annealing process is performed at 1100°C – 1250°C for 1 – 4 hours in a hydrogen gas, argon gas, helium gas or a mixed gas thereof.

5-7. canceled

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8. (previously presented) A silicon epitaxial wafer produced by forming an epitaxial layer on the surface of a base material wafer,

wherein said base material wafer includes:

a COP defect occurrence region of a single crystal containing nitrogen at a concentration of less than  $1 \times 10^{14}$  atoms/cm<sup>3</sup>, wherein said COP defect has a size of 0.1  $\mu$ m or less in the highest frequency of occurrence and there exist no COP defects having a size of more than 0.2  $\mu$ m;

oxygen precipitates formed at a density of  $1 \times 10^4$  counts/cm<sup>2</sup> by applying an oxygen precipitate evaluation heat treatment; wherein

the ratio of the maximum to the minimum of BMD (oxygen precipitate) density is 3 or less in the radial direction of said base material wafer.

9. (original) A silicon epitaxial wafer according to Claim 8, wherein the oxygen concentration of said base material wafer is  $11 \times 10^{17} - 17 \times 10^{17}$  atoms/cm<sup>3</sup> (ASTM F-121, 1979).

10. (original) A silicon epitaxial wafer according to Claim 8, wherein said COP defect occurrence region extends over an 80% or more surface area of said base material wafer in the radial direction.

11-15. canceled.